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## General Notes.

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### MINERALOGY.<sup>1</sup>

**Origin of the "Pflöckstruktur" of Mellilite.**—The "peg structure" ("Pflöckstruktur," "Structure en chevilles") of mellilite is one of its most constant characteristics. This structure has been attributed to original glass inclusions in the mineral. Gentil<sup>2</sup> has recently made a careful microscopic study of this mineral from the localities of Mte. Vultura, Capo di Bove, Hohenstoffeln (Höhgau), Hochbohl, Palma (Canaries), and Rachgoun (Algiers). He concludes that the "peg structure" is due to products of decomposition of the mellilite, of which the most common is a honey-yellow hydrated substance which gelatinizes readily with hydrochloric acid. It has a lower index of refraction and a weaker double refraction than mellilite. The double refraction is so weak as to be hardly appreciable in the small thickness of the "chevilles" and hence was supposed by Rosenbusch to be isotropic. In the mellilite of Vultura and Capo di Bove it is, however, easily made out. In the mellilites from Hochbohl and Palma the decomposition has proceeded farther, producing a zeolite, probably mesotype. This process Gentil likens to the serpentization of olivine. The direction of development of the "chevilles" (normal to the base) is a direction of easy decomposition and is, in some cases, at least one of weak cohesion.

**Blowpipe Coatings on Glass.**—Goldschmidt<sup>3</sup> has proposed the use of a simple device for holding a small glass plate (an object or cover glass) or a mica lamella on the surface of a stick of charcoal, so that the blowpipe coatings are deposited on the glass or mica. It is thus possible to remove them and examine under the microscope or by chemical methods. The fusibility or solubility may be tested and the material is adapted to study by the methods of microchemical analysis. By use of sodium sulphide as a reagent, colored precipitates are obtained as follows: From arsenic, cadmium yellow; antimony, reddish-yellow; lead, molybdenum, tellurium, and copper chloride,

<sup>1</sup>Edited by Dr. Wm. H. Hobbs, University of Wisconsin, Madison, Wis.

<sup>2</sup>Bull. Soc. Franç. Minér., xvii, pp. 108-119. May, 1894.

<sup>3</sup>Zeitsch. f. Kryst. xxi, pp. 329-333, 1893.

black; zinc and tin, unaltered. The method is of special importance in distinguishing arsenic and antimony compounds, and in determining zinc, thallium, and telluric acid.

**Use of Phosphorus in Studying Minerals of High Refractive Index.**—Retgers<sup>4</sup> uses colorless to yellow phosphorous as a medium in which to imbed small mineral grains, which, because of their high refractive index would appear black if imbedded in Canada balsam. Melted phosphorous has a very high refractive index ( $n_D=2.075$ ) and if used in grains of the size of a pin head can be handled without danger. Such a grain is heated on an object glass till fusion begins and quickly compressed under the cover glass. The substance remains long fluid in the capillary space and consolidates clear and transparent. Rutile, brookite, and anatase are the only rock-making minerals of higher index than the phosphorous and these are brought out more clearly by it. If the mineral grains to be examined are so coarse that there is considerable danger of the oxidization of the phosphorous, the latter may be dissolved in carbon bisulphide. It is much more convenient to work with the solution but its maximum index is considerably lower than that of the fused metal.

**Chalcocite from Monte Catini.**—Boeris<sup>5</sup> has investigated some specimens of chalcocite from the Monte Catini mines, Lucca, Italy. On these crystals he has made out five forms new to the locality { (230), (012), (023), (021), (111) }, and one (052) which is new to the mineral. Another new form (270), though very small, was determined with considerable probability from its zones. There is also described a new twinning law for the species, the twinning plane being a face of (011).

**Diopside and Apatite from Zöptau.**—Gräber<sup>6</sup> describes this new locality for diopside and apatite. The former appears in crystals up to 5 cm. long, which have terminations conditioned by the forms  $z$  (021),  $p$  (101),  $u$  (111), and  $s$  ( $\bar{1}11$ ). The crystals are bright grass green and translucent. The crystals of apatite are thick tabular and  $\frac{1}{2}$ –1 cm. long, and are either colorless or of a pale amethyst color. They occur loose in clay and in a much weathered hornblende schist. In addition to the base, first order prism, and first and second order pyramids, two-third order pyramids,  $\mu$  (12 $\bar{3}1$ ) and  $u$  (13 $\bar{4}1$ ) are found on the crystals.

<sup>4</sup> Neues Jahrb. f. Mineral., etc., 1893, II, pp. 130–134.

<sup>5</sup> Zeitsch. f. Kryst., xxiii, pp. 235–239, 1894.

<sup>6</sup> Tscherm. Min. u. Pet. Mitth., xiv (1894) pp. 266–270.

**Serpierite.**—This mineral, which comes from the Laurium Mts. in Greece, was described by Bertrand and Des Cloiseaux<sup>7</sup> and Damour in 1881, but no analysis was made of it. Damour described it as an insoluble hydrated basic sulphate of zinc and copper. Frenzel<sup>8</sup> has recently analyzed the mineral and found it to contain eight per cent of lime and very minute quantities of aluminium, chlorine, and sodium. The analysis is as follows: CuO 36.12, ZnO 13.95, CaO 8.00, SO<sub>3</sub> 24.29, H<sub>2</sub>O 16.75, Total 99.11. This corresponds to the empirical formula 3 (CuO ZnO CaO) SO<sub>3</sub>+3H<sub>2</sub>O.

**Lautite.**—This mineral has been considered a mixture by Groth and Weisbach. A new find from the Rudolf Schachte at Lautau, near Marienberg, Sax., is according to Frenzel<sup>9</sup> very pure, though it never occurs in crystals or even in large masses. The following analysis by him he considers sufficient evidence that lautite is an independent mineral:

	Percentages.	Molecular ratios.
Cu	36.10	0.568
As	45.66	0.608
S	17.88	0.559
	99.64	

The content of silver in the mineral varies from 0-12 per cent, and perhaps more.

**Study of Optical Anomalies by Artificially Coloring.**—Senarmont and later Otto Lehman showed that anisotropic crystals may be artificially colored by adding coloring matter to the solution in which they are forming. They thus become pleochroic. Gaubert<sup>10</sup> utilizes this fact in examining some pseudo-isometric crystals—the anhydrous nitrates of barium, lead, and strontium. The colored crystals obtained show six pleochroic sectors at the same instant, the opposite sectors having the same tint. If a barium nitrate solution be divided into two parts and one of these be colored with methylene blue, the colored crystals obtained have intense pleochroism, although the uncolored crystals from the other part of the solution exhibit no double refraction.

<sup>7</sup> Bull. Soc. Minéral. de France, iv, p. 89, 1881.

<sup>8</sup> Min. u. petrog. Mitth., xiv, pp. 121-130, 1894.

<sup>9</sup> Ibidem.

<sup>10</sup> Bull. Soc. Franç. Minér., xvii, pp. 121-123, May, 1894.

**New Method of Illuminating in Photomicrographic Work.**

—Köhler<sup>11</sup> has suggested a method of securing even illumination of the field when artificial light is used. Instead of removing the condenser and collector from the microscope, as is usually done, thus securing an image of the source of light in the plane of the section, Köhler makes use of an accessory lens and so adjusts the condenser that a sharp image of the accessory lens is brought to the plane of the section. The object is thus uniformly illuminated, even to the margin.

**Chemical Behavior of Dimorphous Minerals.**—Doelter<sup>12</sup> has studied the comparative action of reagents on some dimorphous minerals, viz.: andalusite and kyanite, orthoclase and microcline, epidote and zoisite, enstatite and anthophyllite, diopside and actinolite, pyrite and marcasite, and sphalerite and wurtzite. Finely powdered specimens of each were subjected under similar conditions to the action of such reagents as chlorine and hydrochloric acid gases, hydrofluoric acid, potassium and sodium hydroxides, etc., to determine their relative decomposability. Marcasite is found to be less decomposed by solution of soda than pyrite. The fact that on treatment with water or sulphide of soda, the mineral which separates from the solution on evaporation is always the particular modification which was dissolved, seems to show a chemical difference between the two dimorphous forms of ZnS and those of Fe S<sub>2</sub>. In many other cases the results were negative or the differences were such as might be explained by the slight chemical differences of the substances taken.

**Pearls.**—Though perhaps not strictly to be included in the field covered by these reviews, it seems proper to call the attention of mineralogists to the admirable paper by the late Professor Karl Möbius on pearls<sup>13</sup>, in Velhagen and Klasing's popular magazine. This scientific paper discusses not alone the methods of fishing and extracting pearls, but describes, with the aid of beautiful figures, the different fresh and salt water mussels which bear pearls, the structure of the animal, and the manner of growth of the pearl. The structures of the pearl itself are made clear by drawings from microscopic sections, prepared by the author from a number of valuable gem pearls. The connection between the structure and surface and the value of the gem is also discussed.—WM. H. HOBBS.

<sup>11</sup> Zeitsch. f. Wiss. Mikroskopie, **10**, p. 443 (1893). Abstracted in Zeitsch. f. Instrumentenkunde, **14**, pp. 410-411 (1894).

<sup>12</sup> Neues Jahrb. f. Miner., etc., 1894 (II), pp. 265-277.

<sup>13</sup> Die echten Perlen. Velhagen und Klasing's Monatshefte, IXte Jahrgang, pp. 325-335. (Nov. 1894.)